## REMARKS

Claims 1-24 remain in this application.

Claims 1, 2, 4, 6 and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Cobb in view of Knowles. The Examiner stated *"Cobb discloses a method for message filtering including the step of extracting message body data from messages ( col. 4, lines 59-63),"*:

> A feature of the present invention is the checking of incoming messages to verify that they include valid sender information. Any message which does not contain a valid sender address is assumed to be a junk email communication and is dealt with appropriately (generally deleted). [Cobb at col. 4, lines 59-63]

Initially, it should be noted that independent claims 1 and 8 have been amended to recite that the message body data is extracted from a message body portion of a message. Contrary to the Examiner's position, the cited text of Cobb does not describe extracting message body data from messages, and in particular does not describe extracting message body data from a message body portion of a message. Rather, the noted text of Cobb describes only a step of examining an element of the message attribute data without consideration of the message body data.

The Examiner further described Cobb as *"extracting messages attribute data from messages (col. 4, lines 59-63)"*. It is noted that the Examiner has indicated the same text of Cobb for a disclosure of both message data and message attribute data and has not identified separate elements of Cobb corresponding to the separate elements of message body data and attribute data of claims 1 and 8. Message body data and message attribute data are taken from distinctly different fields of a message, where message attribute data such as information to verify valid sender information is taken from the "From" field in Cobb. Again, Cobb does not describe extracting or utilizing data from a message body field.

The Examiner further described Cobb as *"computing a message feature vector jointly from the messages feature vector (col 4-5, lines 64-23, fig. 4 unit 100)"*:

> The "validity" of a sender address will depend on the specifics of whatever communication system is being used. On the Internet, for example, a sender

> address cannot contain certain characters (such as `control` characters), must include an AT "@" symbol, and must be from a registered domain name. Each of these requirements (as well as others) can be checked. A sender address which violates any of them would be invalid.
>
> Another feature of the present invention is the checking of incoming messages to verify that each message is properly addressed to the user (the recipient). For example, a message which is not addressed to the recipient will be assumed to be a junk email communication and dealt with appropriately (generally deleted).
>
> When determining whether an incoming message is actually addressed to the recipient, the method according to the present invention will consider various appropriate recipient designations for the messaging system being used. In other words, it is possible that the recipient will receive a valid message that is not directly addressed to him. Instead, he might be a CC (carbon copy) recipient, or perhaps a BCC (blind carbon copy) recipient. There may be other possible message recipient designations. As long as the invention user's address is present on at least one of these recipient designations the message is considered valid. If the user's address is absent from all of these recipient groups the incoming message is considered junk email. [Cobb at col. 4-5, lines 64-23]

Initially, Applicant notes that the element stated by the Examiner of "computing a message feature vector jointly from a message feature vector" is not recited in the claims. Rather, the recited element of the claim comprises "computing a message feature vector jointly from the message body data and the message attribute data." Additionally, turning to Fig 4, although unit 100 is shown in two parts, 100a and 100b, Cobb describes these elements as the Message Filtering Program and the Email Client Program (column 12, lines 38-40), which elements do not provide message body data and message attribute data, as is recited in claims 1 and 8. Further, there is no disclosure in Cobb of computing a message feature vector from message body data and message attribute data.

The Examiner further described Cobb as "*computing a messages using the messages feature vector (fig. 7A).*" and "*passing or withholding the message based on the discriminant score (col. 3, lines 21-41, fig. 7A)*":

> Conventional message filtering involves the use of a mail filter in an email recipient's local email system. Such a filter typically sorts incoming email for the recipient into categories determined by the recipient. The filter typically simply scans elements of each email message as it reaches the recipient and determines what category it should be placed in depending on certain criteria. One category is "discard". Messages which the filter places in the discard category are automatically discarded, but in practice the direct deletion of messages via a filter is extremely risky. A perfect filter would catch and dispose of all junk messages and retain all non-junk messages, but such a filter has yet to be demonstrated. This imperfection is primarily caused by the inability of most

> filters to determine what constitutes "junk email". For this reason, most filter designs take a different approach and move suspected junk messages to a temporary or miscellaneous holding category for review by the recipient before deletion. Invariably, desired messages are accidentally marked for deletion and junk messages slip through the filter. The user must typically manually correct these mistakes. [Cobb at col. 3, lines 21-41]

Again, applicant notes the element stated by the Examiner, i.e., "computing a messages using the message feature vector," is not recited in the claims. Rather, claim 1 recites an element comprising "computing a message discriminant score using the message feature vector." As admitted by the Examiner in further discussion of the present rejection, the Cobb reference does not disclose providing a discriminant score, such that the referenced Fig. 7A of Cobb does not include a disclosure of the recited element of computing a message discriminant score using the message feature vector.

The examiner cited Knowles for a disclosure of *"the use of discrimant scores using the messages (col. 4-5, lines 65-50)"* :

> Simple message filters were written to extract the three types of textual material (referred to above) from each message: (1) the text of the SUBJECT: field; (2) unquoted text from the message body; and (3) quoted text from the message body. This resulted in three collections of 2435 document representatives, one for each type of textual material. Some messages had empty document representatives in some of the databases (for instance, a message might have no quoted material) and so could not be retrieved from that database. These messages were used as "target" messages for the matching strategies described herein. Target messages represented the potential parent messages matched against a given "query" (child) message chosen from the database. The "best" match of the target messages (excluding the query message) for a given query message represents a potential parent message.
>
> Each of the three collections was indexed using Version 11.0 of the SMART experimental text retrieval system, obtained Jun. 13, 1995 from directory pub/smart at ftp.cs.cornell.edu. The SMART text retrieval system uses statistical information retrieval techniques to rank target messages based using the cosine similarity formula and a variant of tf.times.idf weighting. Using the SMART system, target messages were represented as vectors of numeric weights:

$$\langle w_{i1}, w_{i2}, \ldots w_{ik}, \ldots w_{it} \rangle$$

where

$$w_{ik} = \frac{f_{ik}}{\sqrt{\sum_{j=1}^{t} f_{ij}^2}}$$

and $f_{ik}$ is the number of times word k appears in message i. Query messages were similarly represented as vectors:

$$\langle q_1, q_2, \ldots q_k, \ldots q_t \rangle$$

where

$$q_k = \frac{f_k \times \log(N / n_k)}{\sqrt{\sum_{j=1}^{t} \left(f_j^2 \times \log(N / n_k)\right)^2}}$$

Here $f_k$ is the number of times the word occurs in the query message, N is the number of messages in the database, and $n_k$ is the number of messages containing word k. SMART scores each target message I as

$$\sum_{j=1}^{t} q_j w_{ij}$$

(Knowles at col. 4-5, lines 65-50)

Applicant notes that the cited disclosure does not teach use of a discriminant score, and in particular the text cited by the Examiner lacks reference to use of a discriminant score in relation to a message. Further, the purpose of the Knowles invention is to match a child message to one or more of a set of possible parent messages. This is in contrast to the function of the present invention as recited in claim 1, which is related to passing or withholding a message on the basis of a discriminant score, and which does not include matching any two particular messages.

Applicant further notes that the Examiner states that the combination of Knowles with Cobb would have been obvious to one of ordinary skill in the art *"in order to achieve a significant level of accuracy at identifying the messages (col. 4, lines 15-23)"*:

> In accordance with the present invention, statistical information retrieval techniques are used in conjunction with textual material obtained by "filtering" of messages to achieve a significant level of accuracy at identifying when one message is a reply to another. A preferred embodiment of the present invention will now be described with reference to the experiments described below. The experiments are meant to be illustrative of the process of the present invention and are not intended to be limiting. (Knowles at col. 4, lines 15-23).

Applicant again notes that the cited disclosure does not teach use of a discriminant score (claim 1). Further, that the function of the Knowles invention is one of matching one message to another is reiterated – "identifying when one message is a reply to another."

The examiner's suggested combination of Knowles with Cobb implies that the statistical information retrieval techniques reference by Knowles may be applied to improve the message filtering properties of Cobb. Assuming improved message filtering implies better decision making in the message filter of Cobb, the Examiner's attention is directed to Figures 7A and 7B of Cobb. The decision making elements in Figs. 7A and 7B of Cobb consist of : "msg sender on blocking list?" (415); "msg sender on acceptance list?" (425); "does msg contain challenge?" (435); "is sender address valid?" (440); "is message addressed to recipient?"; and "is response valid?" (460). It should be noted that all of these decisions are disclosed as being performed accurately through use of simple text comparisons, without the additional complexity of computing features or evaluating information from computed features. Further, in addition to not disclosing an operation for computing a discriminant score in Knowles, there is no teaching, either implicit or explicit, in Cobb or Knowles which would lead one of ordinary skill in the art to know how to incorporate the operations of Knowles into Cobb. Specifically, the inventions to Cobb and Knowles have distinctly different objectives, and it is not seen how the functions for matching potential parent messages to a child message (Knowles) may be incorporated into the system for identifying valid sender information (Cobb) without additional instruction not provided by either reference.

In view of the above-noted elements recited in claim 1 and missing from Cobb and Knowles, and the lack of teaching to combine these two references, it is submitted that claim 1 and the claims dependent therefrom are in condition for allowance.

The Examiner additionally described Cobb as *"using the user environment (col. 4, lines 59-63)"*:

> A feature of the present invention is the checking of incoming messages to verify that they include valid sender information. Any message which does not contain a valid sender address is assumed to be a junk email communication and is dealt with appropriately (generally deleted). [Cobb at col. 4, lines 59-63]

It is assumed that this statement is made with reference to limitations in claim 8. However, there is no recitation of "using the user environment" in claim 8. Rather, claim 8 recites "computing user textual features from the user environment" and "computing user attribute features from the user environment." Cobb does not disclose computing two features from a user environment, nor does either Cobb or Knowles disclose or suggest "computing a user feature vector jointly from user textual features and user attribute features" and performing a subsequent step of computing a message-user similarity score from a message feature vector and a user feature vector. Accordingly, it is submitted that in view of the elements of claim 8 missing from Cobb and Knowles, as noted above, and the lack of teaching to combine these references, claim 8 and the claims dependent therefrom are allowable.

Claims 17, 18-21 and 23 were rejected under 35 USC 102(e) as being anticipated by Cobb. The Examiner stated *"Cobb discloses a method for filtering messages arriving in an online system including the step of providing a plurality of incoming messages from a system (col. 4, lines 59-63)"*:

> A feature of the present invention is the checking of incoming messages to verify that they include valid sender information. Any message which does not contain a valid sender address is assumed to be a junk email communication and is dealt with appropriately (generally deleted). [Cobb at col. 4, lines 59-63]

The Examiner further described Cobb as *"receiving an input from the user instructing the online system to a user (col. 2, lines 34-46)"*:

> According to the present invention, when an electronic message is received, unless the sender is part of a list of senders to accept messages from, it is determined if the sender address is a valid address. If the sender address is not a valid address, then it can be assumed that it is an unsolicited commercial message. However, if the sender address is valid, then a prompt is sent to the sender. The prompt can be any question which can be answered by a person but typically not by a computer system. If a correct response to the prompt is received thereafter, then the message can be assumed not to be a mass mailed unsolicited commercial message, and accordingly is not filtered out. If incorrect, the message is filtered. [Cobb at col. 2, lines 34-46]

Initially, it should be noted that the claims do not include the step of "receiving an input from the user instructing the online system to a user," as stated by the Examiner. Rather, claim 17 recites "receiving an input from the user instructing the online system to act upon each incoming message." Applicant notes that the above passages of Cobb describe verifying a valid

sender address and, in accordance with the above-noted description, involves an operation of the system using a list of senders to filter out messages, and the cited text does not appear to reference user input to act upon incoming messages, as recited in claim 17.

The Examiner additionally described Cobb as including *"labeling each incoming messages in response to the instruction to act upon the incoming messages to create online labeled data set (fig. 4, unit 105, 115, 107,116)"*.

Referring to Fig. 4, units 105, 115, 107, and 116 are described as an acceptance list, a blocking list, general and legal notices, and general notice repository, respectively (col. 7, lines 36-38 for units 105, 115, and 107; col. 10, lines 1-4 for unit 116). These items are predetermined text files input by the user, not labels created in response to an action of a user on an incoming message. The online labeled data set referred to in claim 17 is created from the incoming messages as a result of a user action, i.e., an action to ignore, read and delete, read and act upon a message, or similar action on an incoming message. There is no disclosure in Cobb of labeling incoming messages based on the action of a user, or of creating an online data set using labeled incoming messages.

The Examiner further described Cobb as *"training a classifier with the online data set (fig. 4, unit 103)."*

Referring to Fig. 4, unit 103 of Cobb is described as one or more links (col. 6, lines 49-52), not a classifier. The link 103 is described as connecting users 101a-101c and there is no disclosure of this element either performing as a classifier or being trained as a classifier, as is recited in claim 17. Applicant further notes that Cobb does not appear to reference a classifier at any point in the disclosure.

In view of the above-noted claimed elements of claim 17 which are not disclosed by Cobb, it is submitted that claim 17 is not anticipated by Cobb, and that claim 17 and the claims dependent therefrom are allowable.

The Examiner additionally described Cobb as operating to *"ignore the incoming message, read and delete the incoming messages, perform a further action upon the incoming messages, ..., retain using online labeled data set (col. 3, lines 21-41)"*:

> Conventional message filtering involves the use of a mail filter in an email recipient's local email system. Such a filter typically sorts incoming email for the recipient into categories determined by the recipient. The filter typically simply scans elements of each email message as it reaches the recipient and determines what category it should be placed in depending on certain criteria. One category is "discard". Messages which the filter places in the discard category are automatically discarded, but in practice the direct deletion of messages via a filter is extremely risky. A perfect filter would catch and dispose of all junk messages and retain all non-junk messages, but such a filter has yet to be demonstrated. This imperfection is primarily caused by the inability of most filters to determine what constitutes "junk email". For this reason, most filter designs take a different approach and move suspected junk messages to a temporary or miscellaneous holding category for review by the recipient before deletion. Invariably, desired messages are accidentally marked for deletion and junk messages slip through the filter. The user must typically manually correct these mistakes. [Cobb at col. 3, lines 21-41]

The cited text of Cobb is apparently made with reference to claims 18-20 and 23 which are directed to instructions resulting in an online labeling to create an online labeled data set based on the actions of a user upon receiving a particular message. The cited text simply describes actions a user in Cobb may take with a message, such as a message in a temporary or miscellaneous holding category. Cobb does not teach coupling the response of a user to a plurality of incoming messages with the creation of an online labeled data set. Accordingly, claims 18-20 and 23 are believed to be allowable over Cobb for these additional reasons.

The Examiner also described Cobb as *"forwarding a message (col. 5, lines 24-27, fig. 4, unit 104)"*:

> Yet another feature of the invention is that it prompts unrecognized email senders, for example, by returning their message and asking them a predetermined question or one of a set of predetermined questions: [Cobb at col. 5, lines 24-27]

The cited text of Cobb is apparently made with reference to claim 21. The cited text of Cobb refers to an operation of the system to prompt a sender for a response. There is no reference to forwarding of a message received by a user, the message being forwarded as a result of a user action. Further, as noted previously, there is no disclosure of a user action of forwarding a message resulting in training of a classifier with an online data set. Accordingly, claim 21 is believed to be allowable over Cobb for these additional reasons.

Claims 11-16 were rejected under 35 USC 102(a) as being anticipated by Geiger et al. Initially, it is noted that the Examiner's discussion of the rejection refers to a reference to

"Drum" which reference is not of record. Therefore, the following remarks are made with reference to the noted locations found in the Geiger et al. reference.

The Examiner described Geiger et al. as *"acquiring a set of messages spanning a time period (col. 3, lines 52-65, col 8, lines 24-38)"* and *"acquiring time series values spanning the time period (col 8, lines 24-38, col 8-9, lines 60-3)"*:

> Business rules may also be used at the post office to direct incoming e-mails to particular employees for further handling. For example, a business rule may forward an e-mail message from outside of the company to a particular employee or user (e.g., Marketing Director) when the text of message matches specific keywords or other properties (e.g., text within the message matching product name keywords), even where the employee is not one of the originally specified recipients.
>
> These various types of business rules enable the organization to apply very detailed, automatic control over all e-mail messages being handled by one or more post offices in the company's e-mail system. [Geiger et al. at col. 3, lines 53-65]
>
> To support the receipt and review of gated messages outside of the conventional delivery paradigm, a GPO 106 provides a gatekeeping message index 287 and gatekeeping message store 288 which is used to store gated messages prior to review and processing. The gatekeeping message index 287 and gatekeeping message store 288 are preferably separate from the message index 285 and message store 286 used for storing messages during normal rule processing and transfer. This is because during the gatekeeping phase storage is transient, typically for only as long as necessary to process the messages. In contrast, the gatekeeping message index 287 and gatekeeping message store 288 are used for persistent storage of gated messages until reviewed and processed, which may require storage for extended periods of time (e.g., 30 days). [Geiger et al. at col. 8, lines 24-38]
>
> In one embodiment, each folder has two time parameters associated with it: a release date and a retain date. The release date is the date on which all messages in the folder are released. The retain date is the date up to which all messages in the folder are retained, and then deleted on the specified date. Using these attributes, a gatekeeper can create any number of folders to release or delete gated messages after various times. The earliest time parameter is always executed first. FIG. 19, for example, shows a release folder 1902 with a release date of Jun. 1, 1997, and a delete folder 1904 with a retain date of Sep. 1, 1997. [Geiger et al. at col. 8-9, lines 60-3]

Claim 11 has been amended to recite "acquiring a time series by recording a history of values over the time period." Geiger et al. do not disclose acquiring time series. In accordance with applicants' invention, the time series represents a history of values from a measurable process of interest. The only time information referred to by Geiger et al. relates to associating release and retain dates to folders storing messages for the gatekeeper. Geiger et al. teaches that messages in a folder are released from the gatekeeper on the release date and retained up until the retain date, at which point the messages are deleted (col 8, lines 60-65). There is no

disclosure in Geiger et al. of a time series formed by recording a history of values over a time period.

The Examiner additionally described Geiger et al. as *"defining significant event in time series (col 8, lines 39-59)"*:

> FIG. 2 illustrates this embodiment with two distinct message indices and message stores. A regular message index 285 indexes all regular (non-gated) messages received by the GPO 106, which are then stored in the regular message store 286. Gated messages however are indexed in a gatekeeping message index 287, and stored in the gatekeeping message store 288. The GPO 106 distinguishes a gated message from a non-gated message by whether or not it is a wrapped message.
>
> Messages in the gatekeeping message index 287 are categorized into a number of folders for subsequent handling. In this disclosure the term "mailbag" is used interchangeably with the term "folder." The master folder table 290 defines these folders and their parameters. The master folder table 290 includes an inbox for each gatekeeper, into which gated messages for that gatekeeper are placed. Useful folders which may be defined include a return folder, a delete folder, and a release folder; other folders may also be created as needed by a gatekeeper. Each folder has a unique folder ID which is stored with the message in the message index 240 and a folder name.
> [Geiger et al. at col. 8, lines 39-59]

Referring to the cited text, Geiger et al. do not teach identification of significant events or reference a time series. Further, as noted above, Geiger et al. do not obtain time series information; without a time series, Geiger et al. can not define significant events in the time series.

The Examiner further described Geiger et al. as *"defining time interval preceding the significant event in time series (col 9, lines 4-14), and training a classifier to pass messages occurring in the defined interval (col. 9, lines 15-33)"*:

> In another embodiment, more sophisticated processing is provided with the folders. In this embodiment, each folder also has a time parameter, and an action associated with the folder. A folder action is a gatekeeper-defined action to be applied to the messages in the folder according to the time parameter. The actions include gating, forwarding, copying, deleting, or returning the messages. In addition, complex action sequences may also be defined by a gatekeeper, such as copying and then deleting messages. This flexible definition of the folder actions enables a gatekeeper to precisely control the processing applied to gated messages. The time parameters may be either:
>
> 1. A delta time: This parameter specifies an amount of time after which a message in the folder is acted upon according to the folder action. The delta time is measured by the GPO 106 relative to a timestamp of the message.

> 2. A time interval: a periodic time interval for acting upon messages in the folder. All messages in the folder are acted upon according to the folder action at the same time upon expiration of the interval.
>
> 3. Fixed time: a specific date and/or time at which all messages in the folder are acted upon according to the folder action.
>
> Generally, the inbox has a delta time parameter associated with it, while the other folders have a time interval parameter.
>
> Each folder may also be associated with a gatekeeper role, which identifies the owner of the folder as the gatekeeper who created the folder. This allows the gatekeeper who created the folder to reset the time parameter and action. [Geiger et al. at col. 9, lines 4-33]

Again, Geiger et al. do not teach acquiring a time series, so subsequent analysis of the time series is not possible. Geiger et al. teach taking specific actions to messages in a folder based on time information. Column 9, lines 15-26 define three time parameters. *Delta time* specifies how long to wait until a message in a folder is acted upon according to a predetermined rule. *Time interval* is a periodic time interval for acting on a folder. *Fixed time* is a specific date or time at which all messages in a folder are acted upon. There is no teaching to defining a time interval preceding a significant event in a time series. Further, Geiger et al. do not disclose training a classifier, and does not contemplate providing a step of passing messages occurring in defined intervals preceding significant events. Rather, Geiger et al. uses simple time stamp based information to control when predetermined actions are applied to messages in a folder. Accordingly, Geiger et al. fails to disclose and does not anticipate the method steps recited in claim 11, and it is submitted that claim 11 and the claims dependent therefrom are allowable.

In apparent reference to claim 13 the Examiner additionally described Geiger et al. as *"event relate to financial time series data (col. 8, lines 24-38)"*:

> To support the receipt and review of gated messages outside of the conventional delivery paradigm, a GPO 106 provides a gatekeeping message index 287 and gatekeeping message store 288 which is used to store gated messages prior to review and processing. The gatekeeping message index 287 and gatekeeping message store 288 are preferably separate from the message index 285 and message store 286 used for storing messages during normal rule processing and transfer. This is because during the gatekeeping phase storage is transient, typically for only as long as necessary to process the messages. In contrast, the gatekeeping message index 287 and gatekeeping message store 288 are used for persistent storage of gated messages until reviewed and processed, which may require storage for extended periods of time (e.g., 30 days). [Geiger et al. at col. 8, lines 24-38]

In addition to not disclosing obtaining time series data, as noted with regard to claim 11, Geiger et al. do not disclose or reference financial time series data. Accordingly, claim 13 is believed to be further patentable over Geiger et al.

In apparent reference to claims14-16, the Examiner described Geiger et al. as *"classifier train to pass messages indicating an anticipated increase, decrease and constant in time series (col 8, lines 24-38, col 9, lines 4-14)."* [Note cited text above]

The cited passages of Geiger et al. fail to teach use of a classifier, training of a classifier, or use of any type of time series information. In addition, the text of Geiger et al. does not include any description related to anticipation of a change in time series values (increase, decrease, constant). Accordingly, it is submitted that claims 14-16 are allowable for reasons in addition to those given with regard to claim 11.

The indication of allowable subject matter in claims 3, 5, 7, 9, 10, 22, and 24 is noted with appreciation.

In view of the foregoing amendments and remarks, it is respectfully submitted that claims 1-24 of the present application are in condition for allowance. Accordingly, applicants request reconsideration of the application and allowance of all claims.

If the present amendment raises any questions or the Examiner believes that an interview would facilitate prosecution of the present application, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

**STEVENS & SHOWALTER, L.L.P.**

By _____

Michael D. Folkerts
Registration No. 33,348

7019 Corporate Way
Dayton, OH 45459-4238
Telephone: (937) 438-6848
Facsimile: (937) 438-2124
E-mail: mfolkerts@speakeasy.net